

Salinity Management in Ventura County

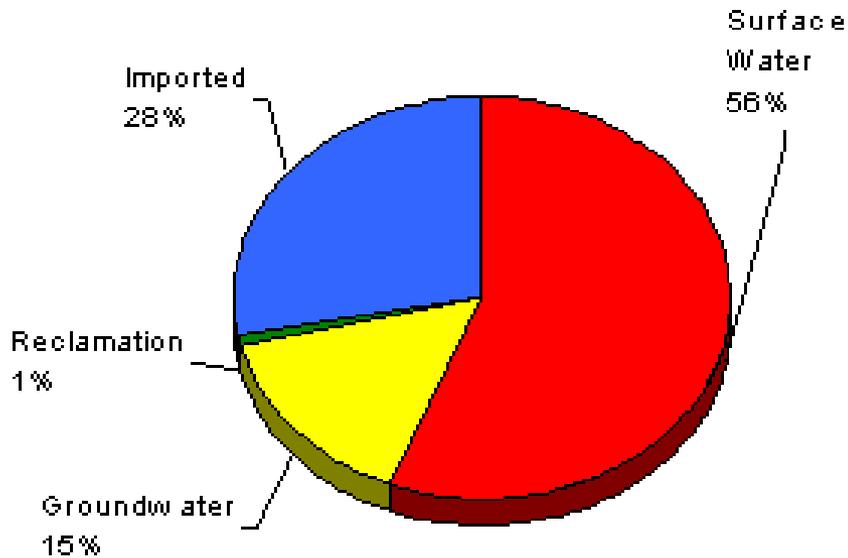
Forum On Groundwater Management &
Policy

November 17, 2015

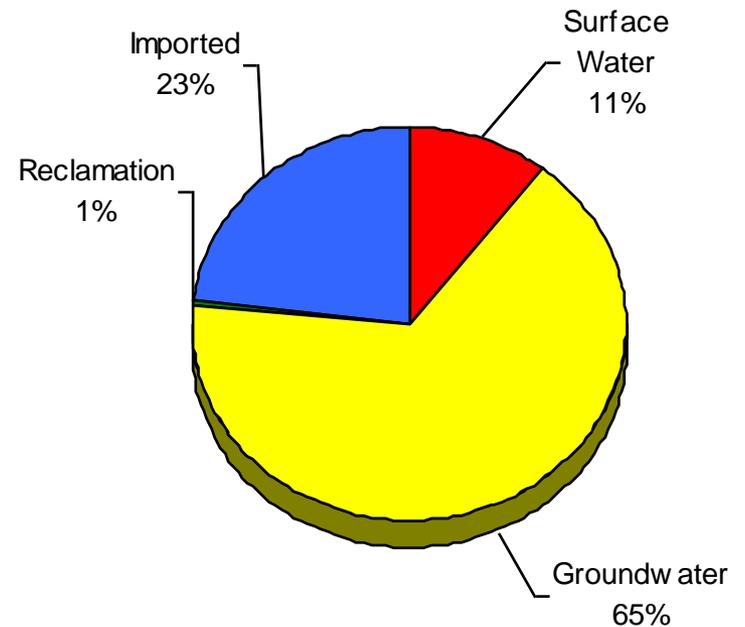
Gerhardt Hubner, P.G.
Deputy Director
Watershed Protection District

Groundwater Supplies 65% of the Total County Water Demand

California

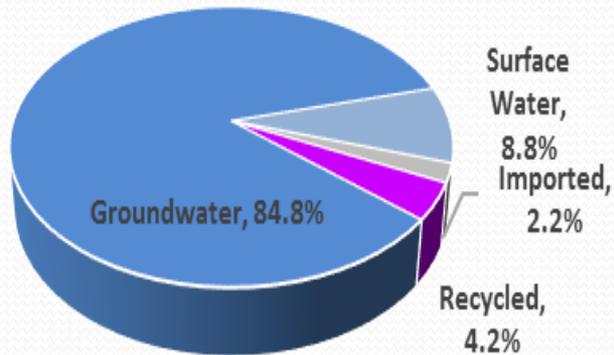


Ventura County

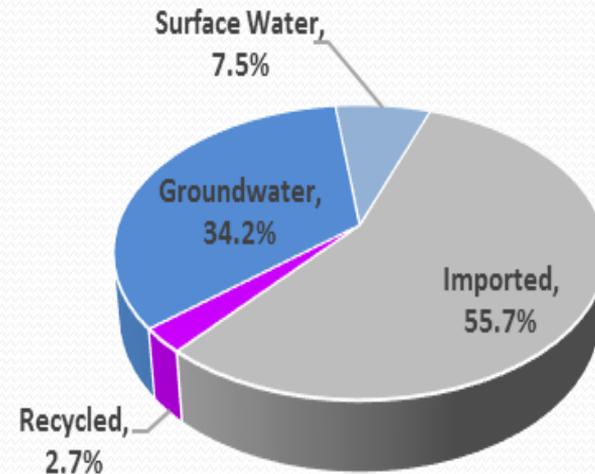


Ventura County Groundwater Resources and Users

Agriculture

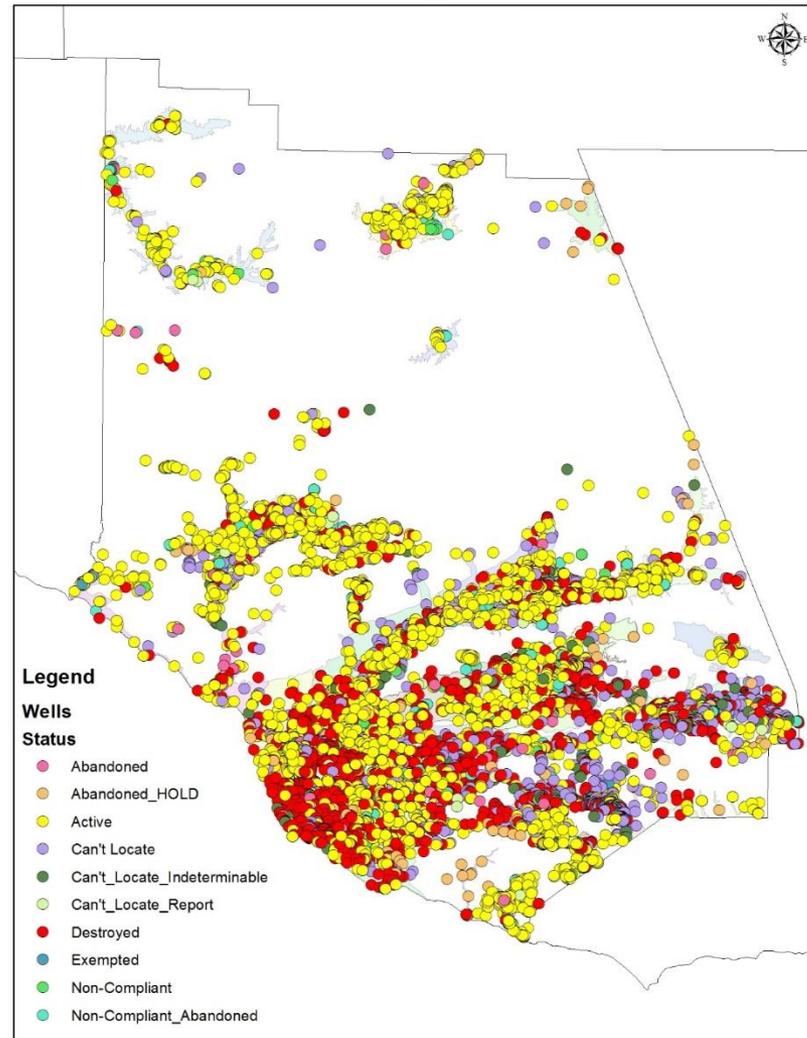


Municipal & Industrial

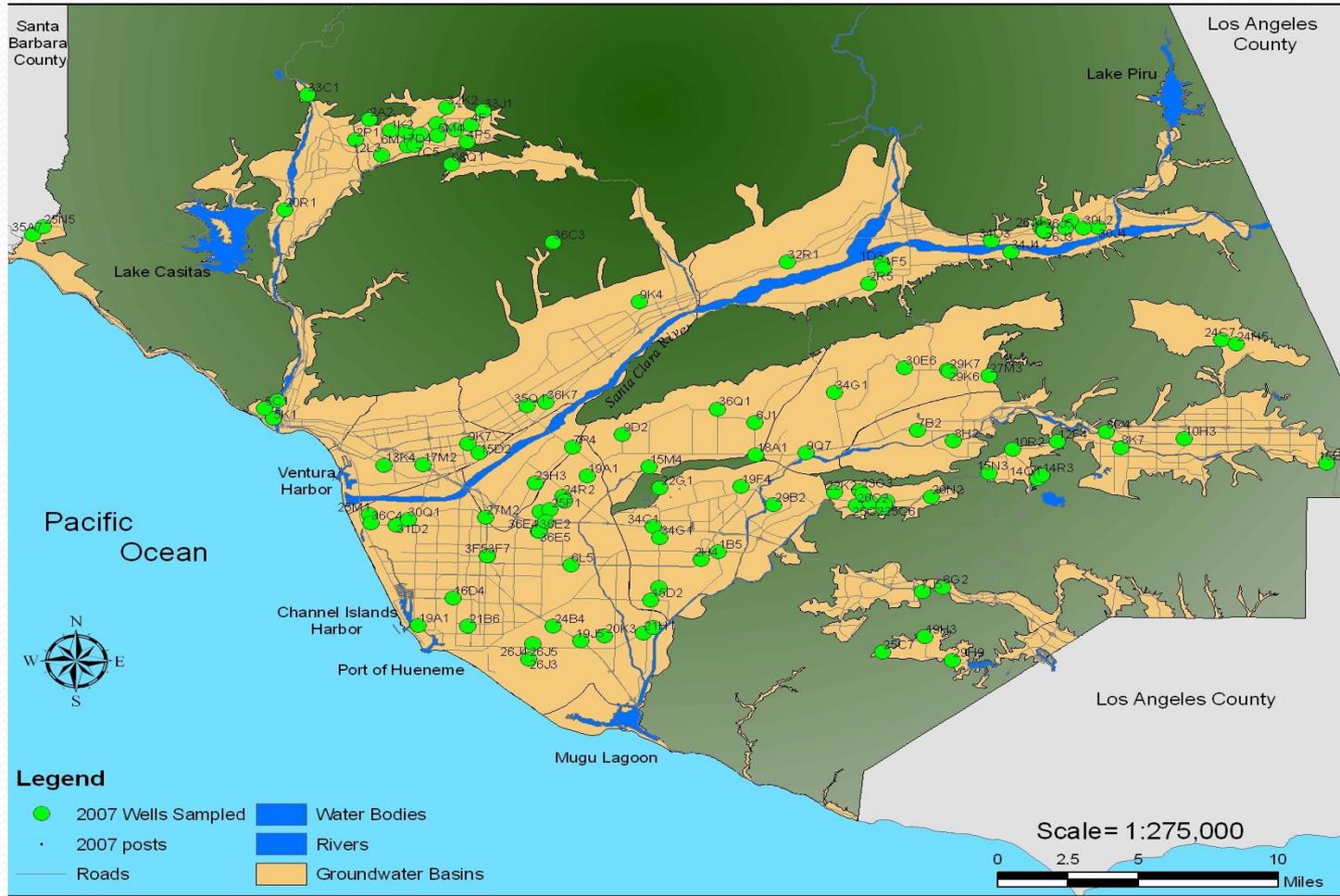


Wells in County Database

Approximately 9,000



LOCATION OF GROUNDWATER QUALITY SAMPLING

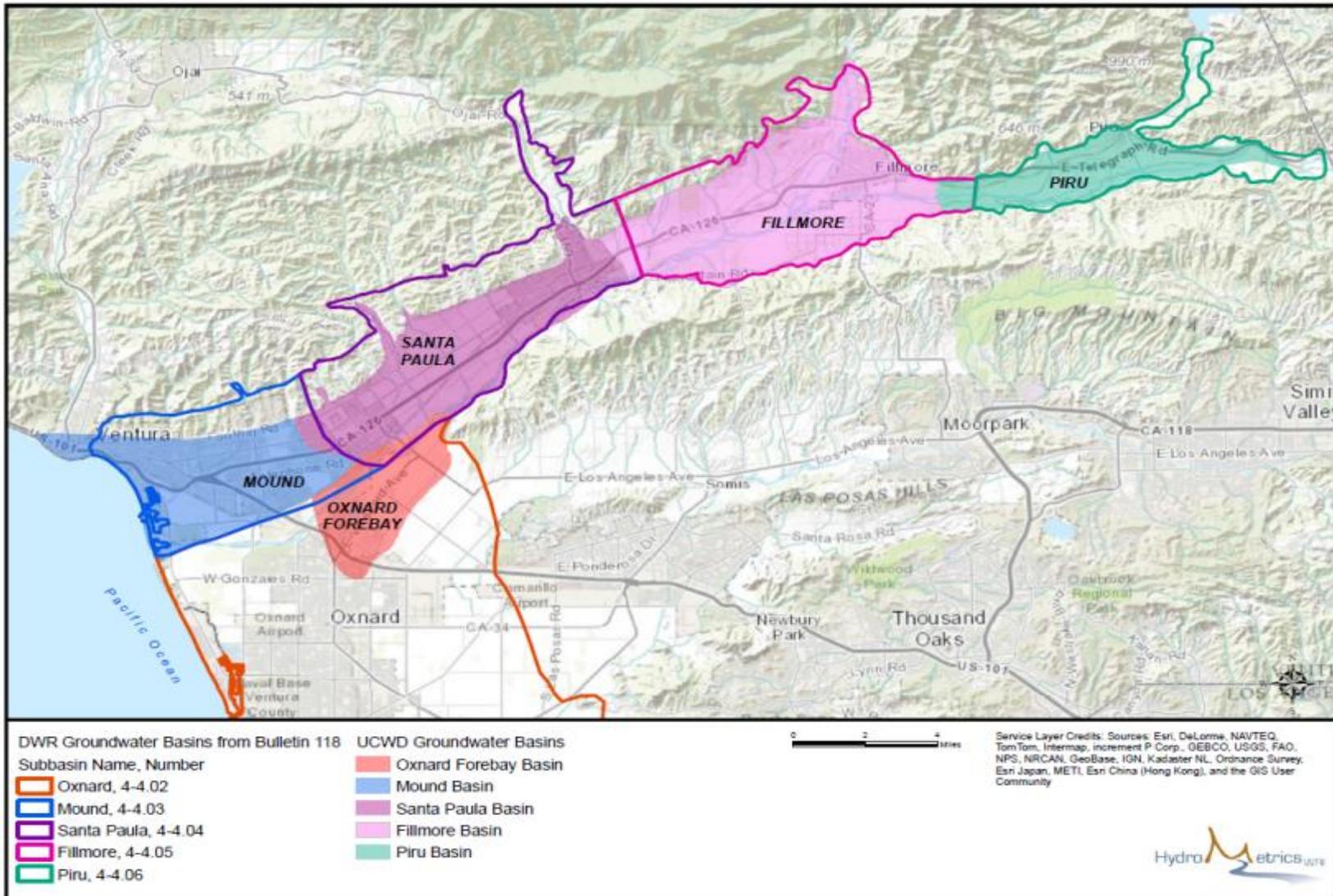


Santa Clara River Watershed

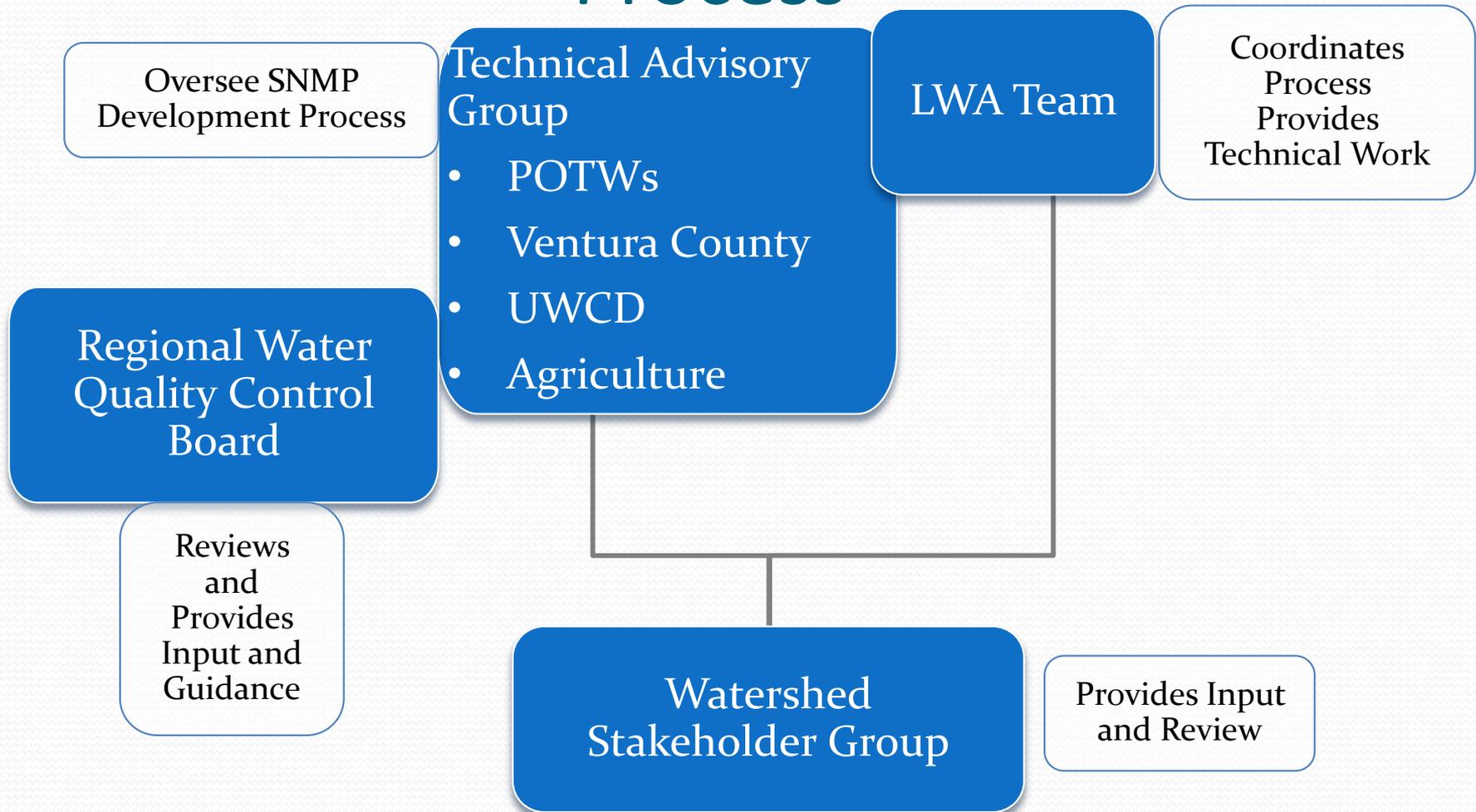
Who We Are – Lower Santa Clara River SNMP Group

- Group Established in August 2011
- Hold Quarterly Meetings – District is Administrative/Technical/Grant Lead
- Cost Sharing Memorandum of Agreement
- \$397,000 in Proposition 84 DWR Grant Funding
- Total Project Budget = \$531,530
- Multi-Disciplinary Consultant Team

LSCR SNMP Planning Area



SNMP developed through Stakeholder Process

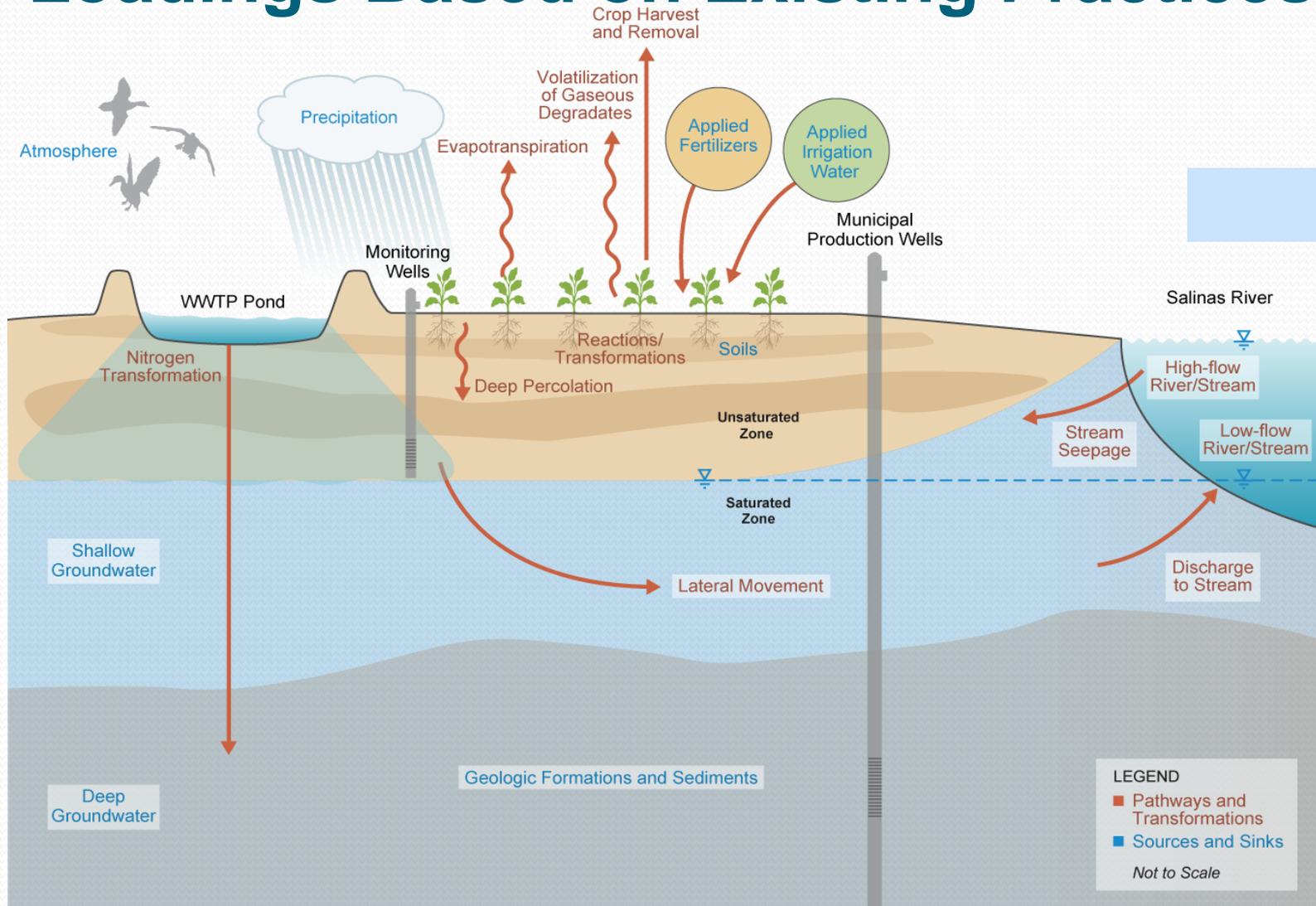




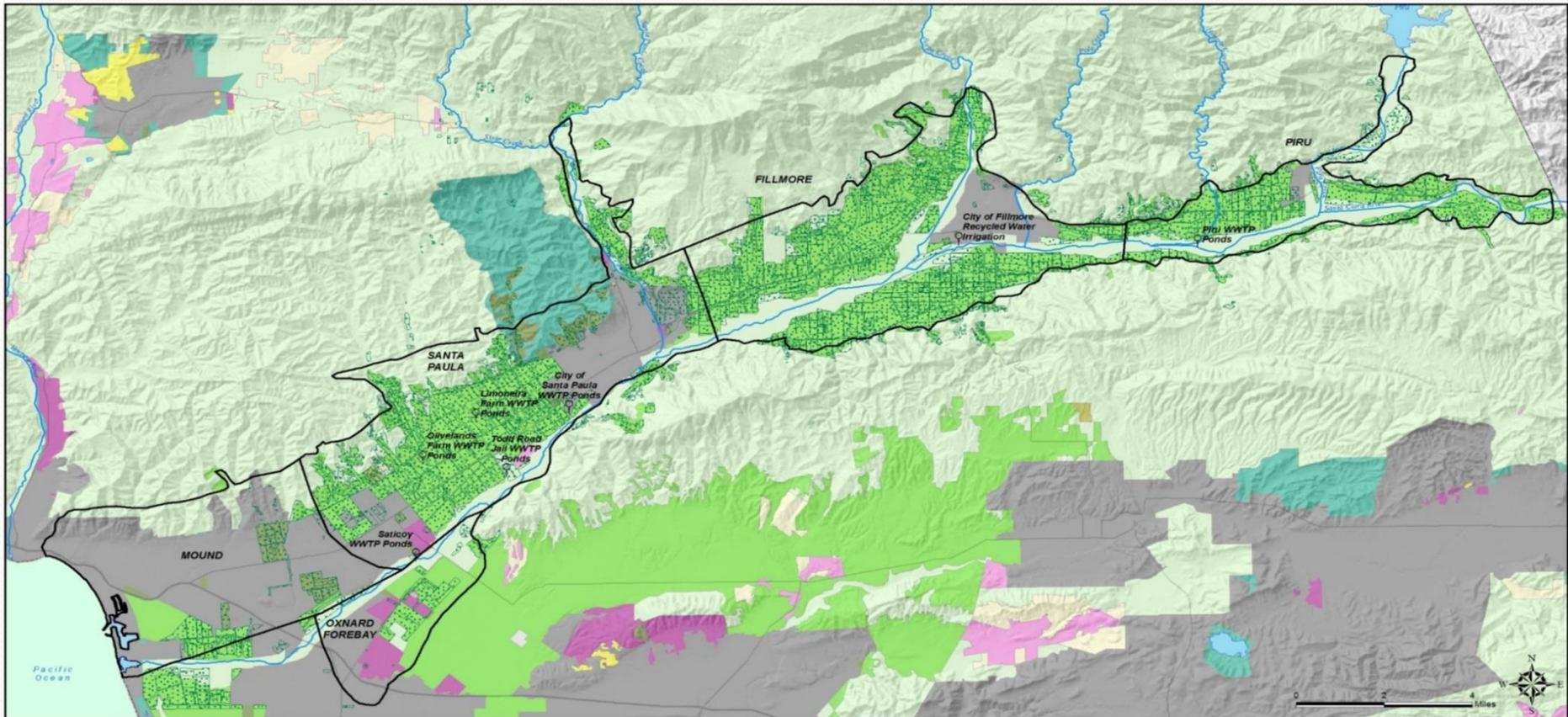
LSCR Basin Challenges

- Groundwater WQOs are already exceeded in some basins,
- Influent water quality (chlorides) from USCR basins,
- Application of Recycled/Brine Disposal from POTWs (Piru, Fillmore, Santa Paula, and Ventura),
- State water from Lake Piru (can have elevated chlorides during dry years),
- Strong agricultural presence in LSCR basins (irrigation return flow, nutrients),
- Water users rely on GW for >65% of water supply

Identify Salt & Nutrient Sources, & Loadings Based on Existing Practices



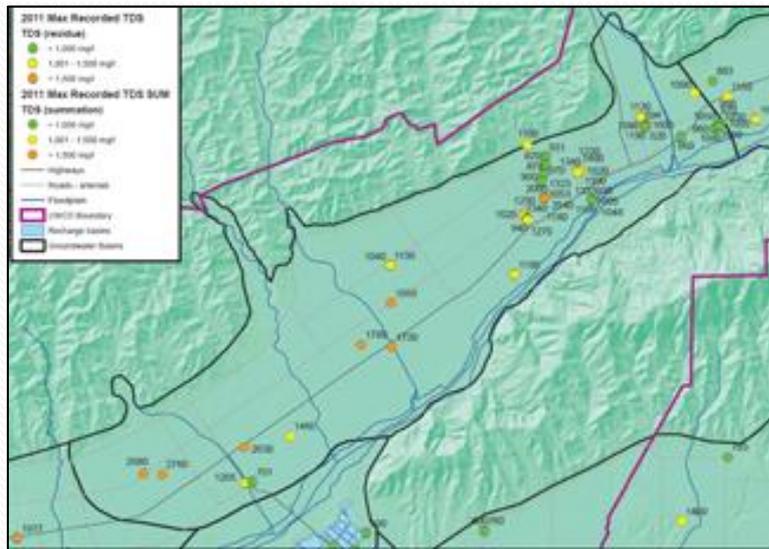
Primarily agriculture and open space



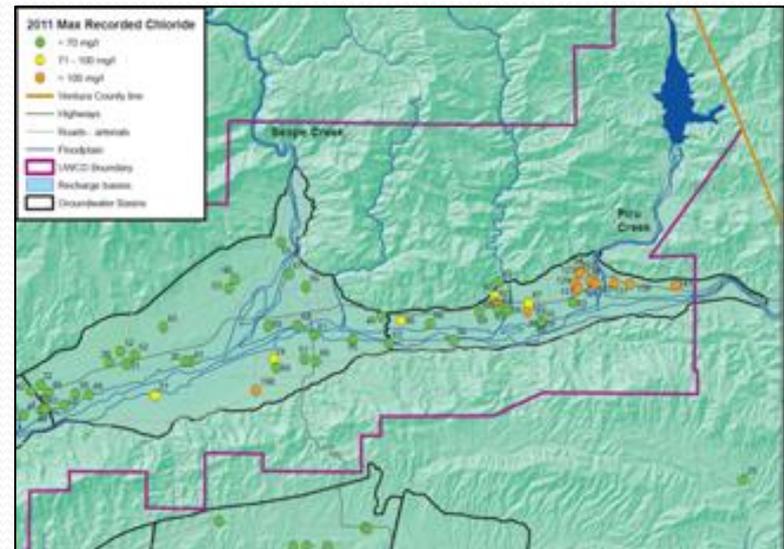
- Study Planning Area
- Selected Rivers and Creeks
- Cropped Areas (May 2012)
- Ventura County General Plan (2011)
- Agricultural
- Agricultural - Urban Reserve
- Existing Community
- Existing Community - Urban Reserve
- Open Space
- Open Space - Urban Reserve
- Rural
- Rural - Urban Reserve
- Rural 5 Acre Minimum
- Urban
- Ventura Harbor
- WWTP Percolation Ponds

Leverage Existing Groundwater Basin Data

- Available groundwater quality data sufficient to assess average groundwater concentrations for each sub-basin
- Compare to water quality objectives to estimate assimilative capacity for each sub-basin

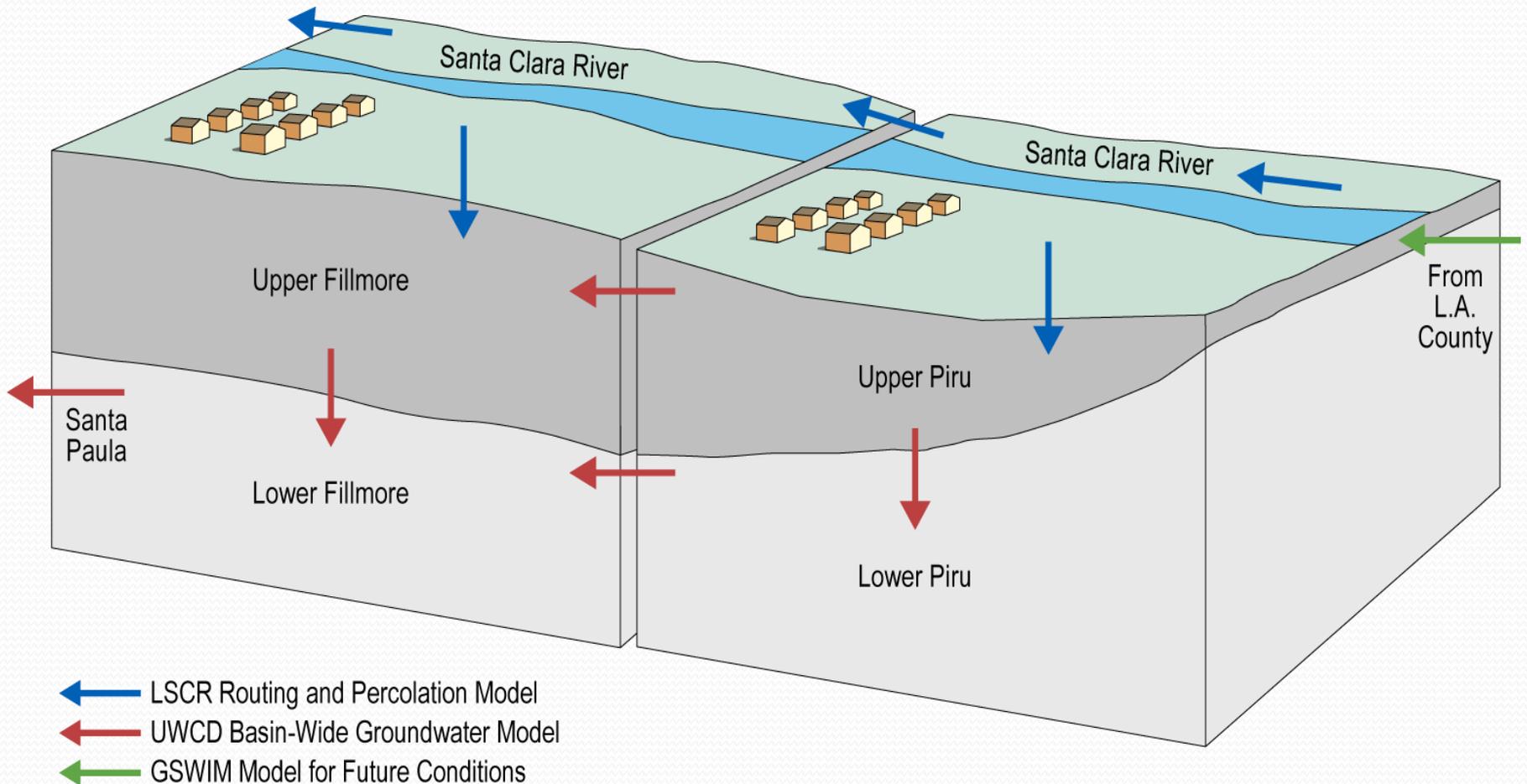


Santa Paula (UWCD, 2012a)

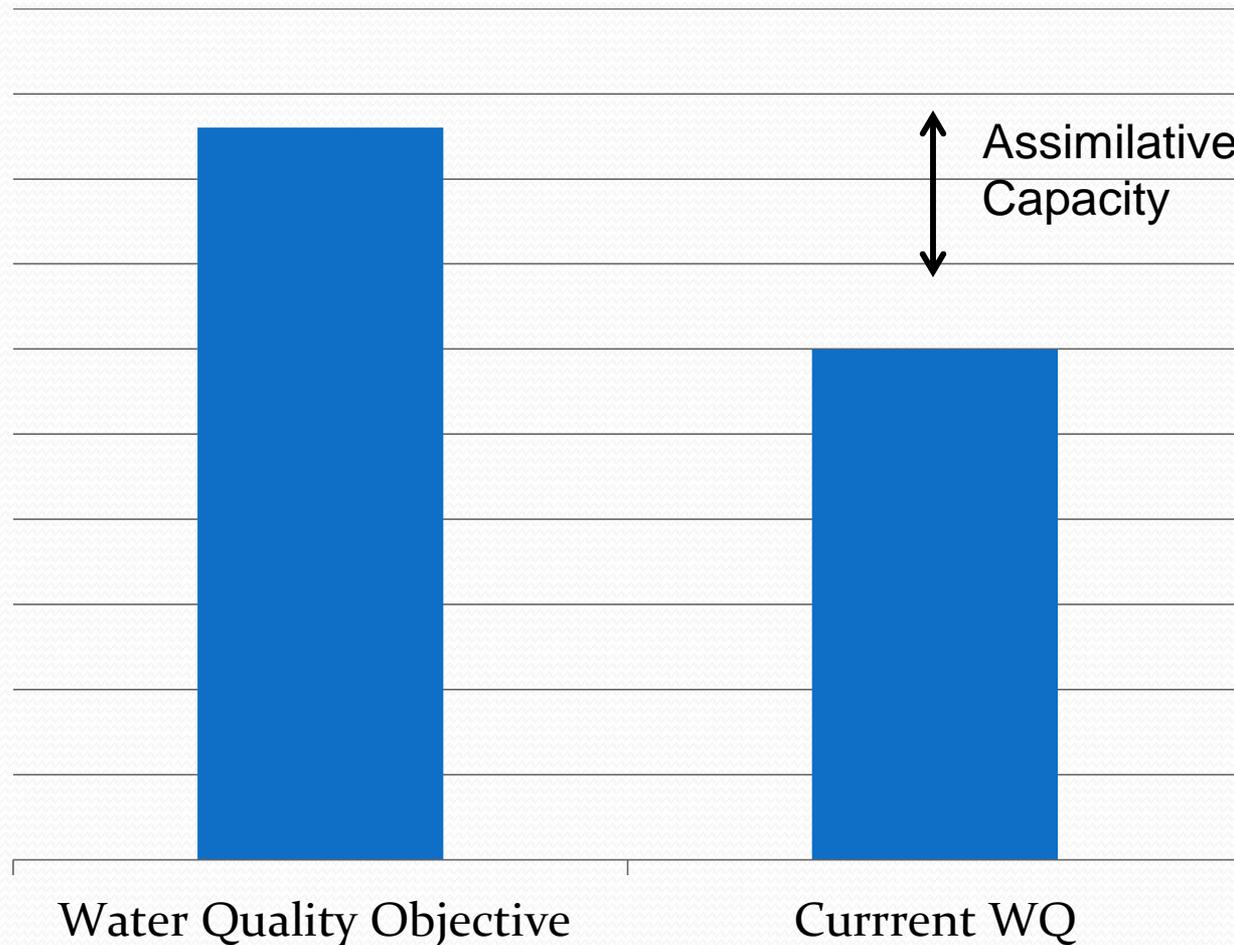


Piru and Fillmore (UWCD, 2012a)

Fate and Transport Analysis - Simple Box Model of Sub-Basins



What is Assimilative Capacity?

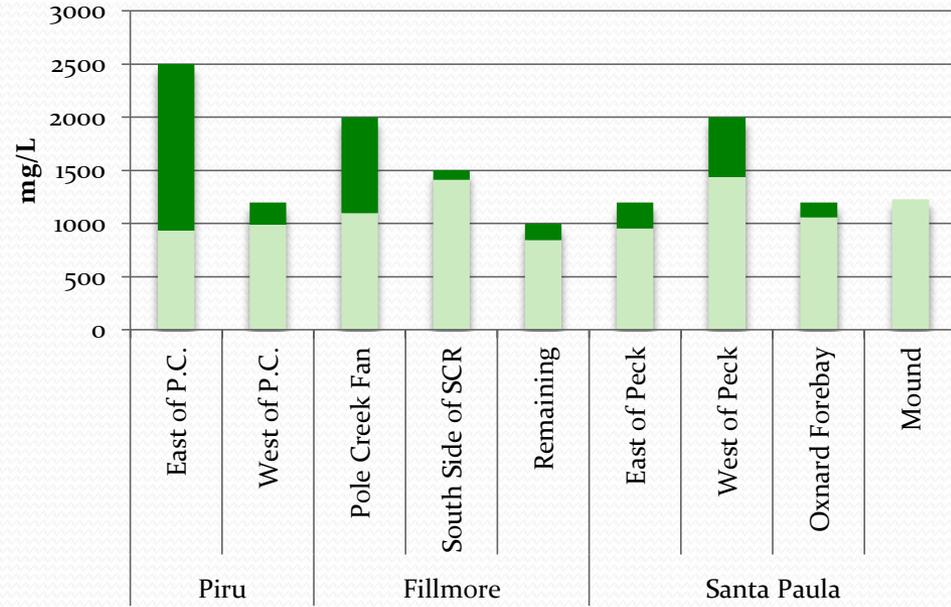


Chloride Assimilative Capacity

TDS Assimilative Capacity

Current Chloride Quality Available Assimilative Capacity

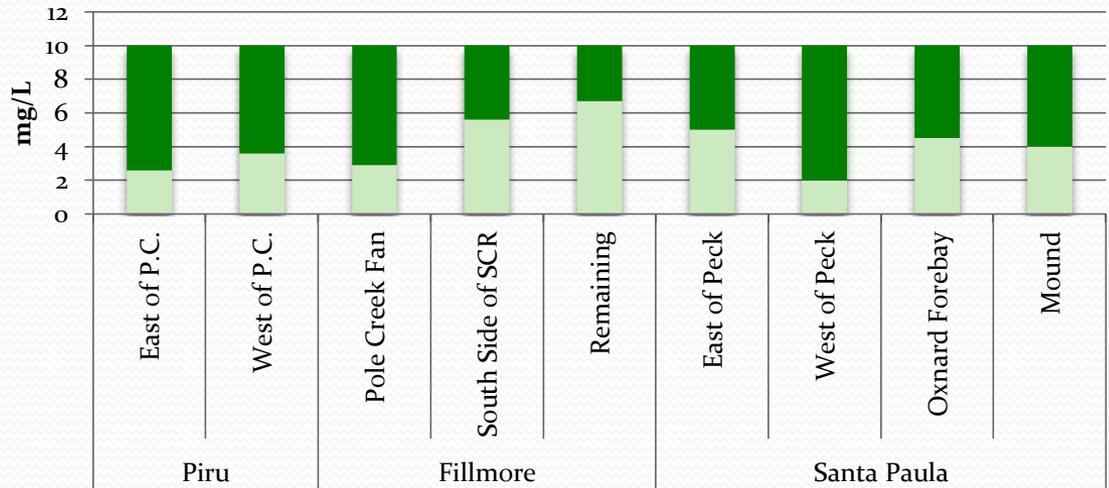
Current TDS Quality Available Assimilative Capacity



Area Weighted Avg
Concentration
Demonstrate Existing
Assimilative
Capacity in All but One
Sub-basin

Nitrate-N Assimilative Capacity

Current Nitrate-N Quality Available Assimilative Capacity



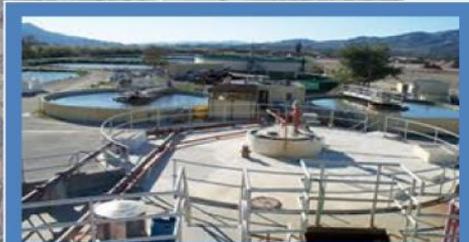
The POTWs have invested significant \$ to improve water quality & meet regulations



Santa Paula Wastewater Treatment Plant



Fillmore Wastewater Treatment Plant



Piru Wastewater Treatment Plant



Ventura Wastewater Treatment Plant

Recycled water will be important for sustaining communities into future, but projects in different stages of development



Proactively implementing salt and nutrient management measures for many years to protect basins

Ordinances and source control



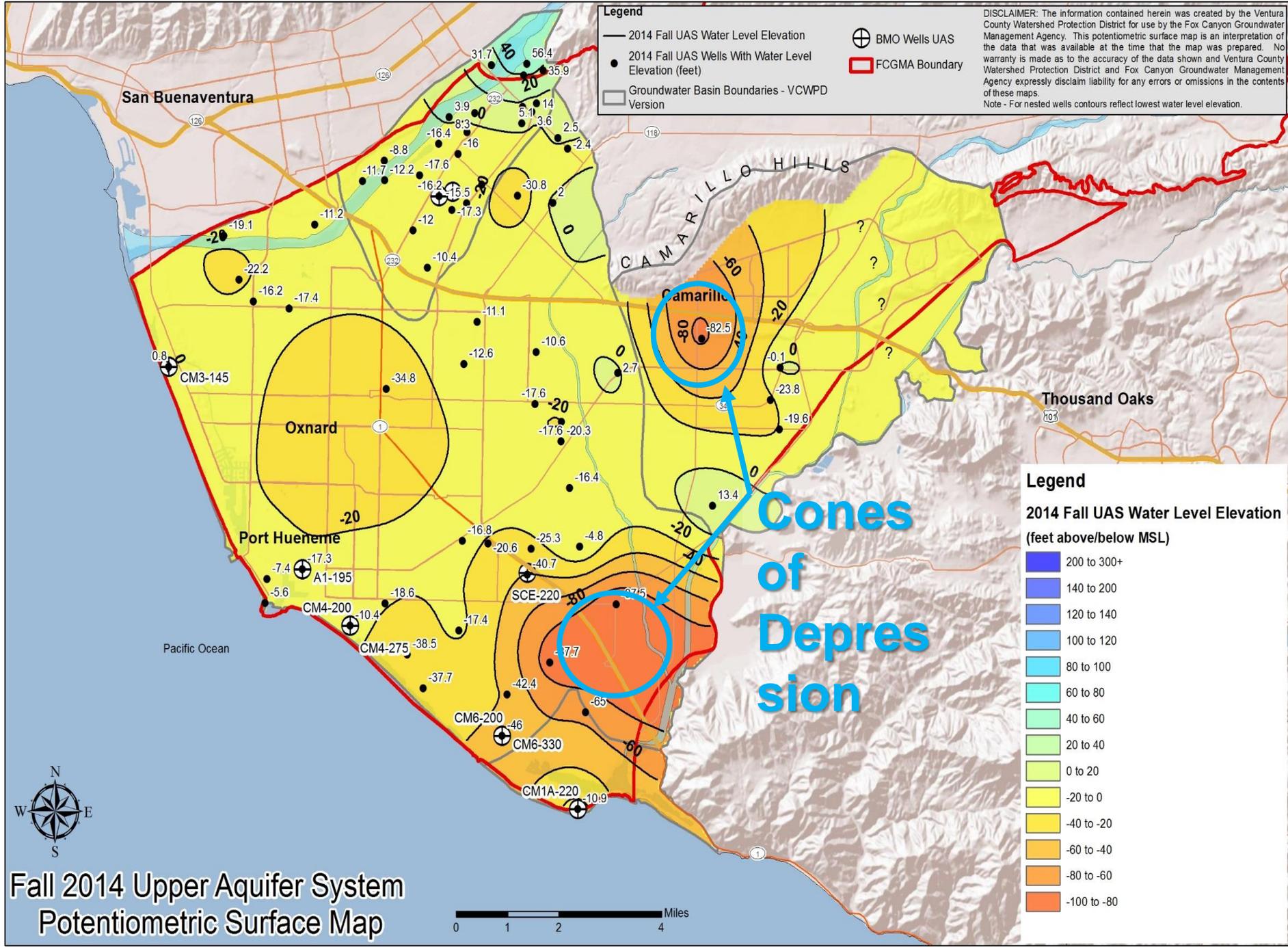
Managing Surface
Water Runoff

New and upgraded wastewater
treatment plants



**Regional Board Adopts LSCR
SNMP Basin Plan Amendment
July 2015!**

Oxnard Plain & Pleasant Valley Basins



Legend

- 2014 Fall UAS Water Level Elevation
- 2014 Fall UAS Wells With Water Level Elevation (feet)
- Groundwater Basin Boundaries - VCWPD Version
- ⊕ BMO Wells UAS
- ▭ FCGMA Boundary

DISCLAIMER: The information contained herein was created by the Ventura County Watershed Protection District for use by the Fox Canyon Groundwater Management Agency. This potentiometric surface map is an interpretation of the data that was available at the time that the map was prepared. No warranty is made as to the accuracy of the data shown and Ventura County Watershed Protection District and Fox Canyon Groundwater Management Agency expressly disclaim liability for any errors or omissions in the contents of these maps.
 Note - For nested wells contours reflect lowest water level elevation.

Legend

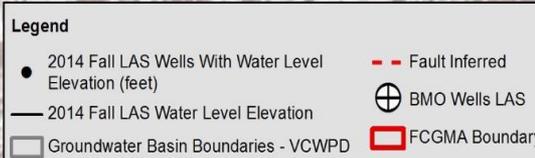
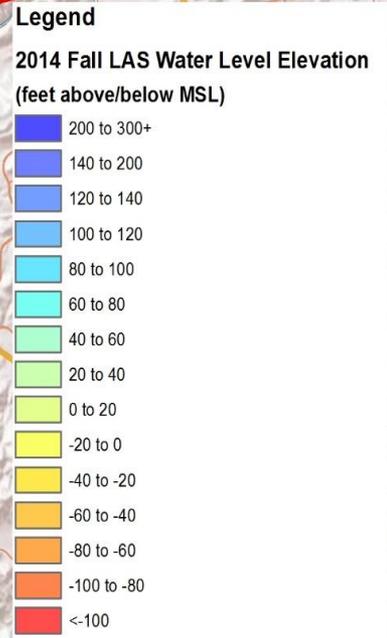
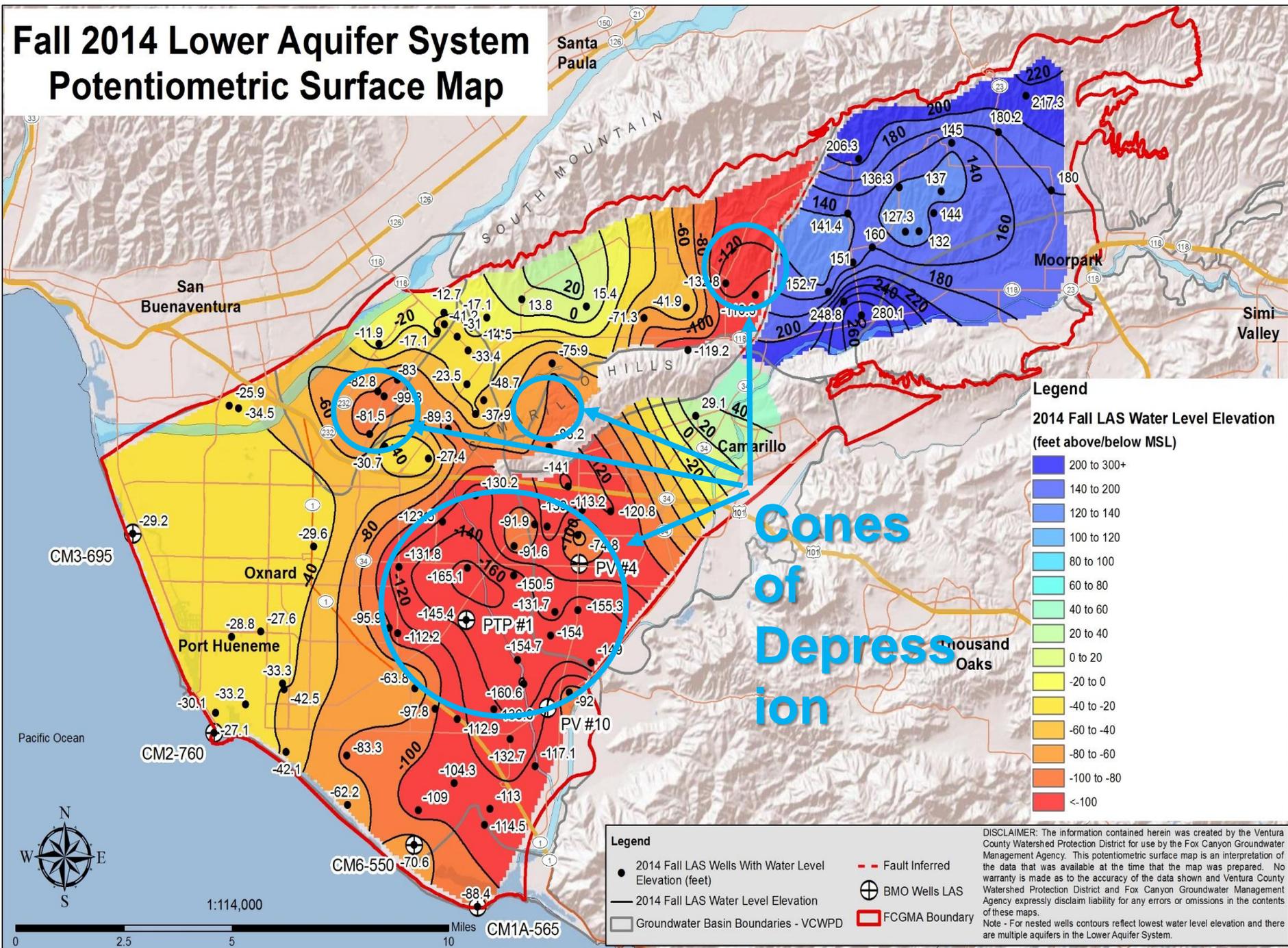
- 2014 Fall UAS Water Level Elevation (feet above/below MSL)**
- 200 to 300+
 - 140 to 200
 - 120 to 140
 - 100 to 120
 - 80 to 100
 - 60 to 80
 - 40 to 60
 - 20 to 40
 - 0 to 20
 - 20 to 0
 - 40 to -20
 - 60 to -40
 - 80 to -60
 - 100 to -80

Fall 2014 Upper Aquifer System Potentiometric Surface Map



Cones of Depression

Fall 2014 Lower Aquifer System Potentiometric Surface Map

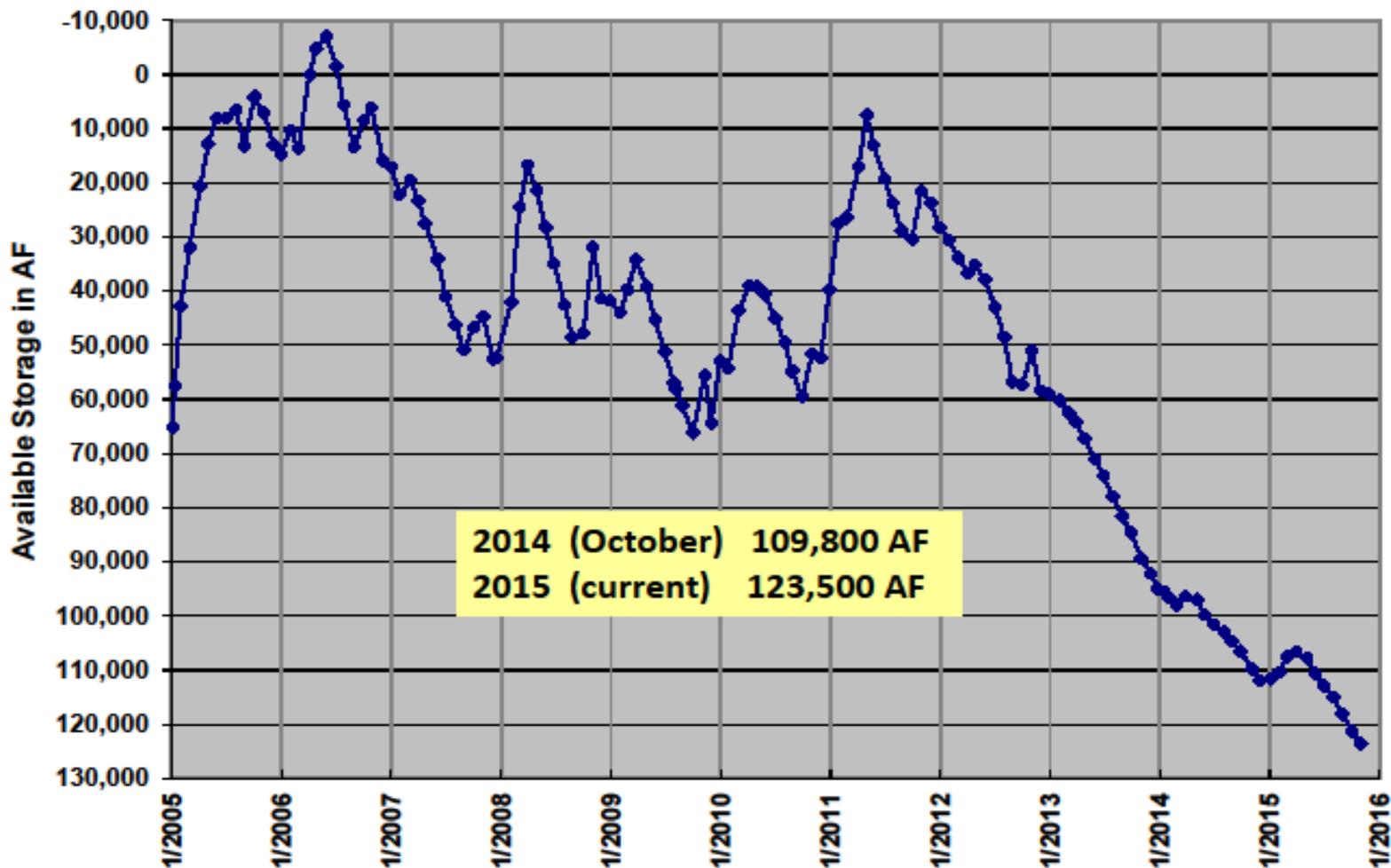


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 Note - For nested wells contours reflect lowest water level elevation and there are multiple aquifers in the Lower Aquifer System.

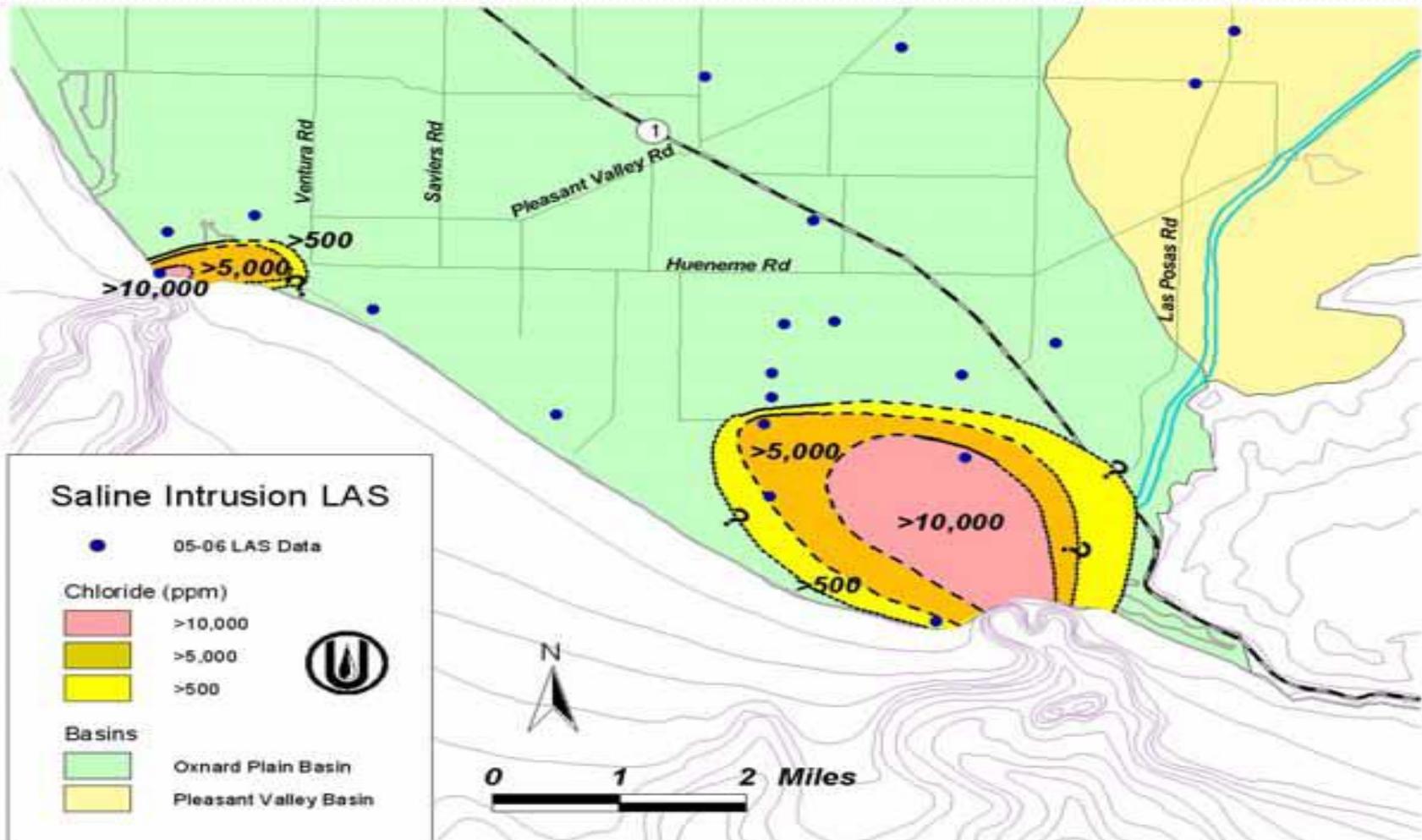
United Water Conservation District

Available Storage in the Forebay Basin

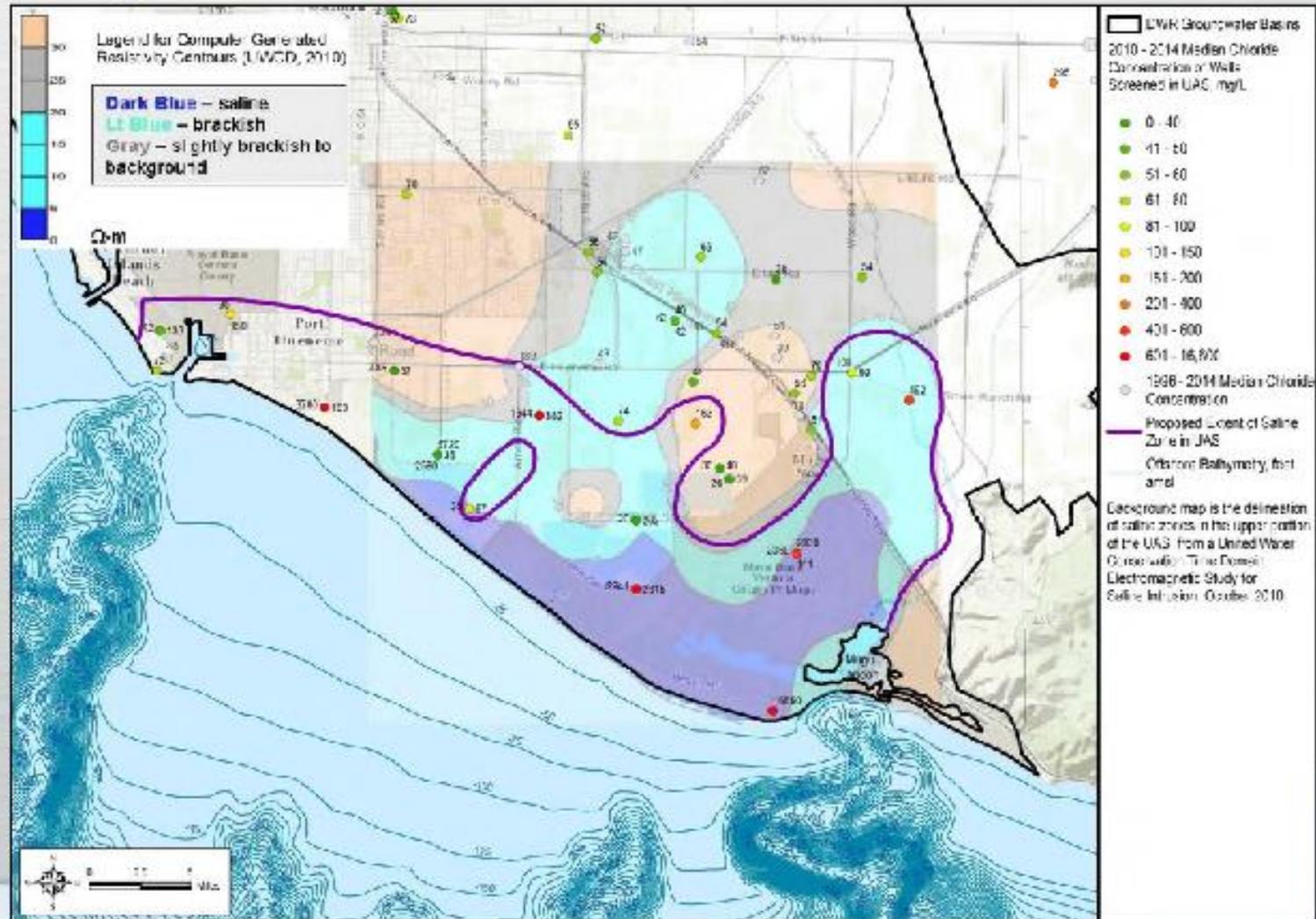
Last 10 Years



2007 FCGMA Groundwater Management Plan



Proposed Coastal Saline Zone - UAS



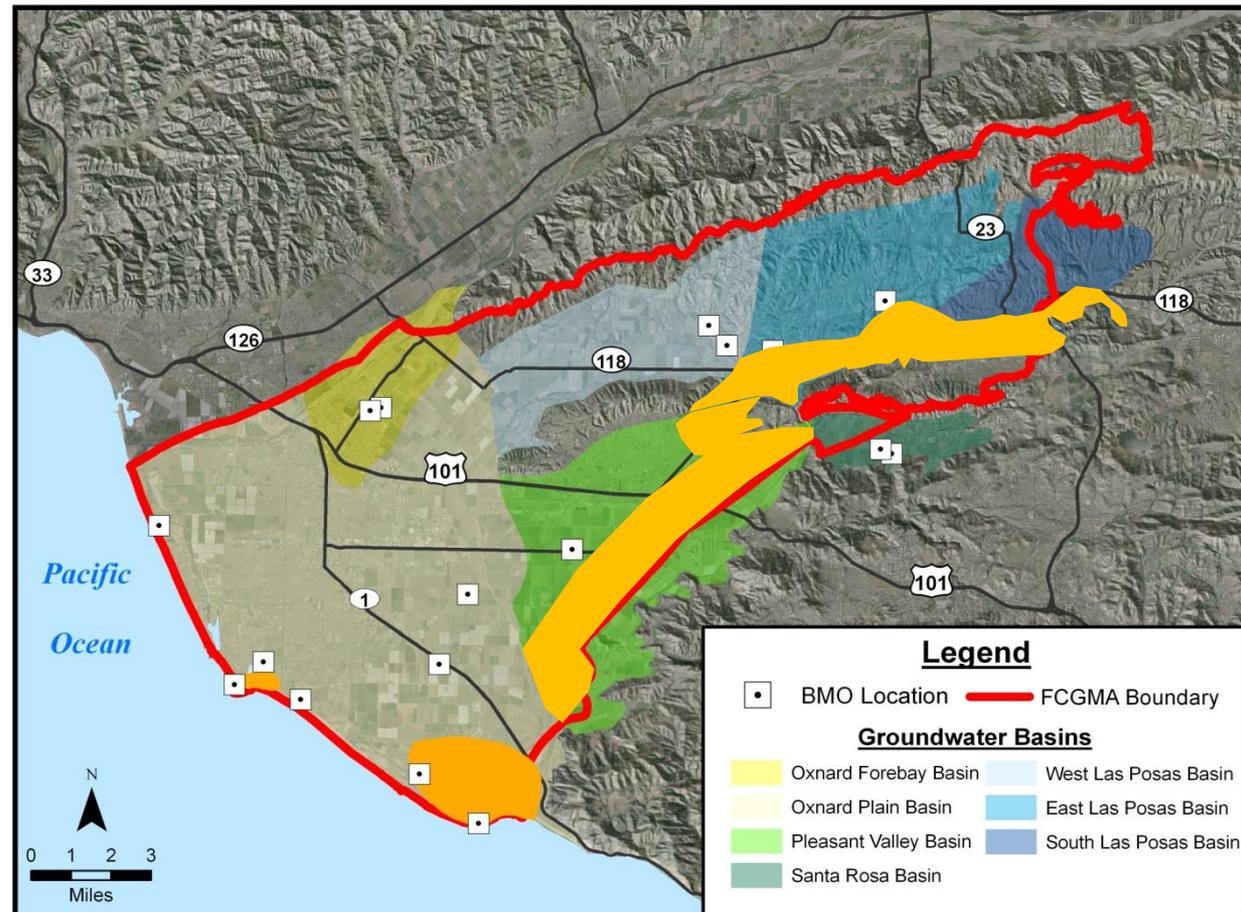
Emergency Ordinance E

- Adopted by Board of Directors - April 2014
- Due to concerns about drought and water levels/reduction in other water supplies/water levels approaching and/or going below historic lows.
- Phases in 20% reduction in groundwater extraction starting in 2014, being fully in place by January 1, 2016.
- Conservation credits cannot be accumulated or used.
- No new water wells (unless Board approved)

Calleguas Creek Watershed

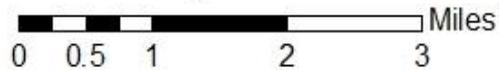
Migration of Poor Quality Water

- Prevent saline intrusion from various sources
- Protect public supply wells from nitrates

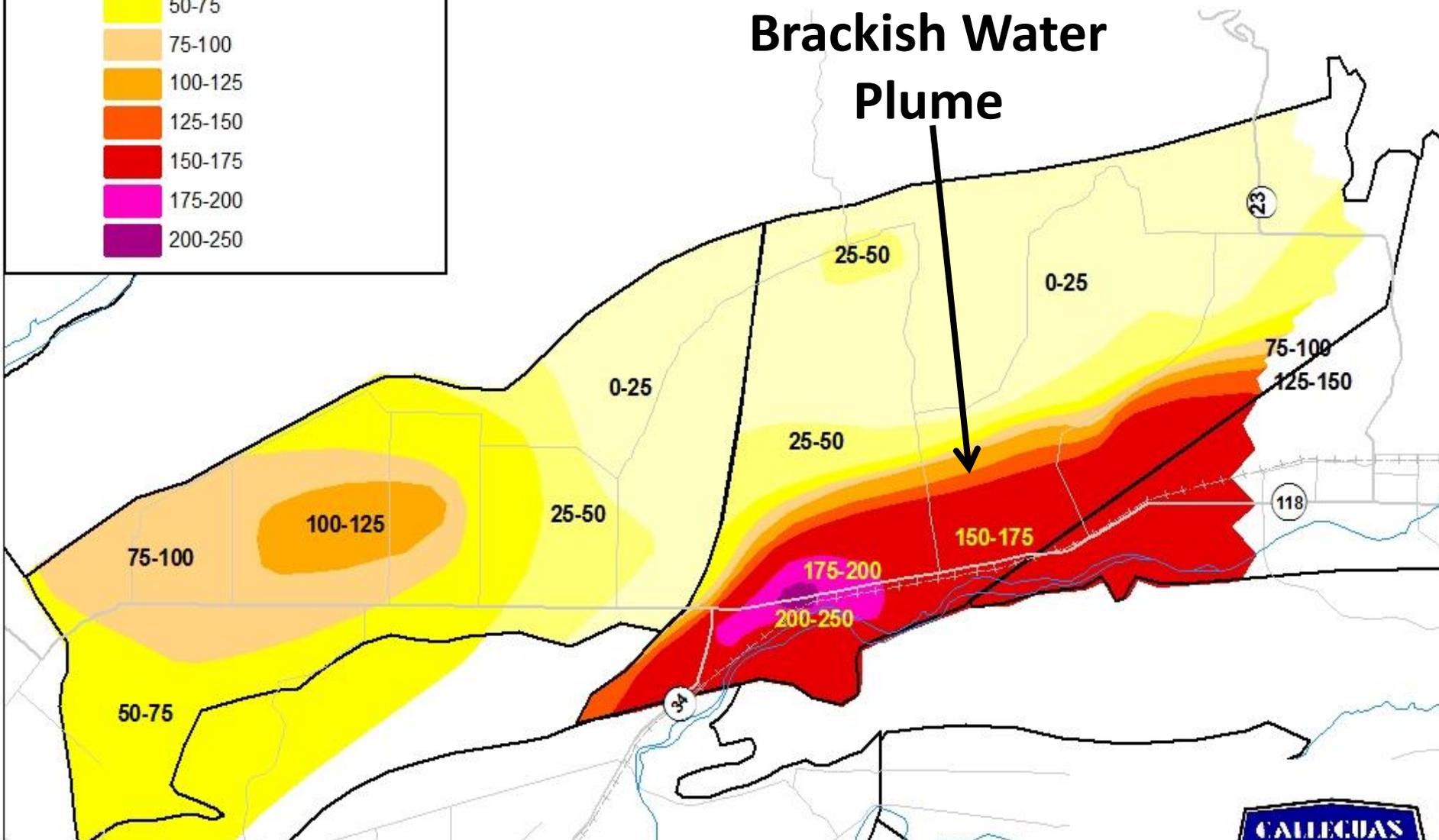


2010 Chloride In Lower Aquifer

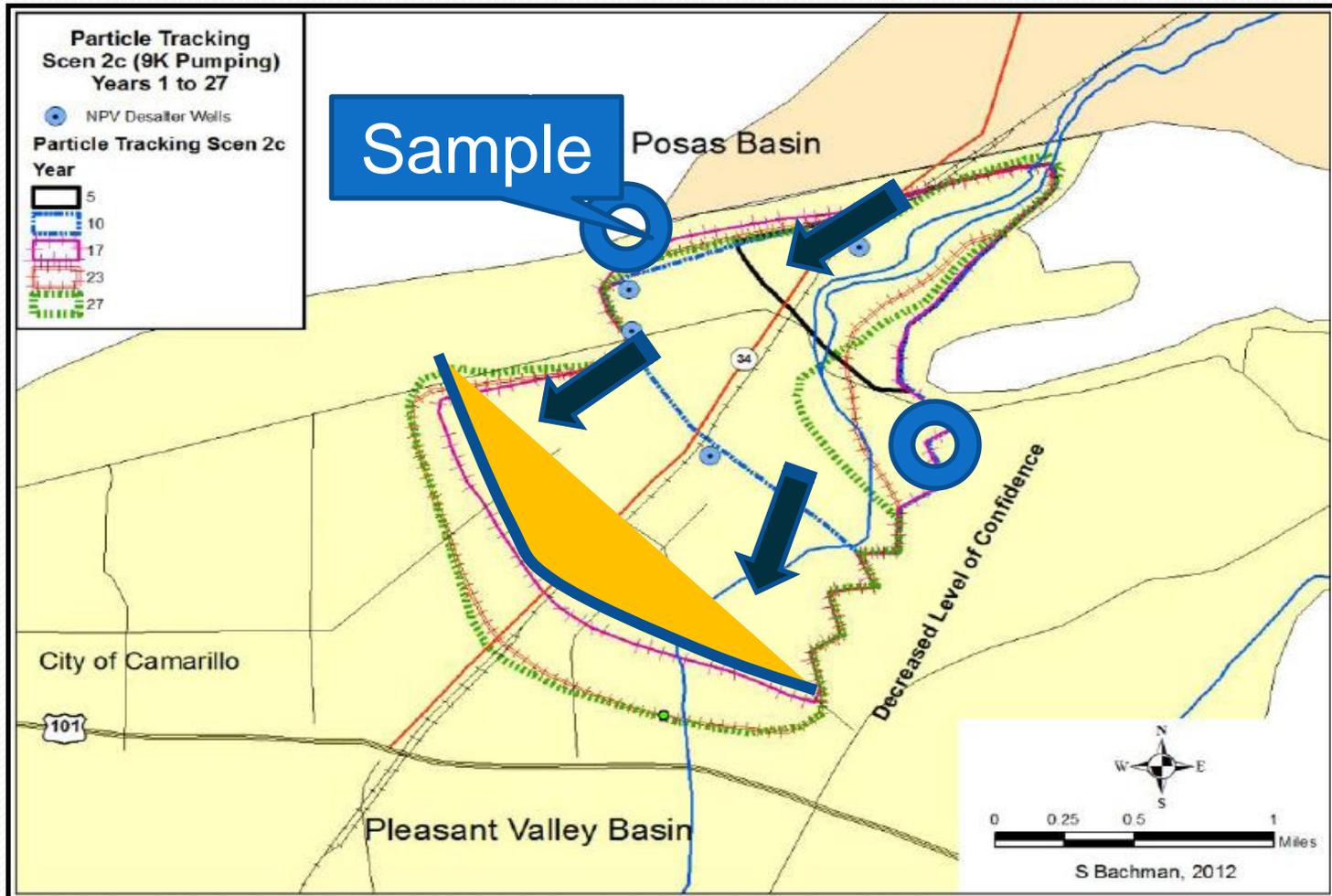
Chloride 2009-10
Concentration (mg/L)

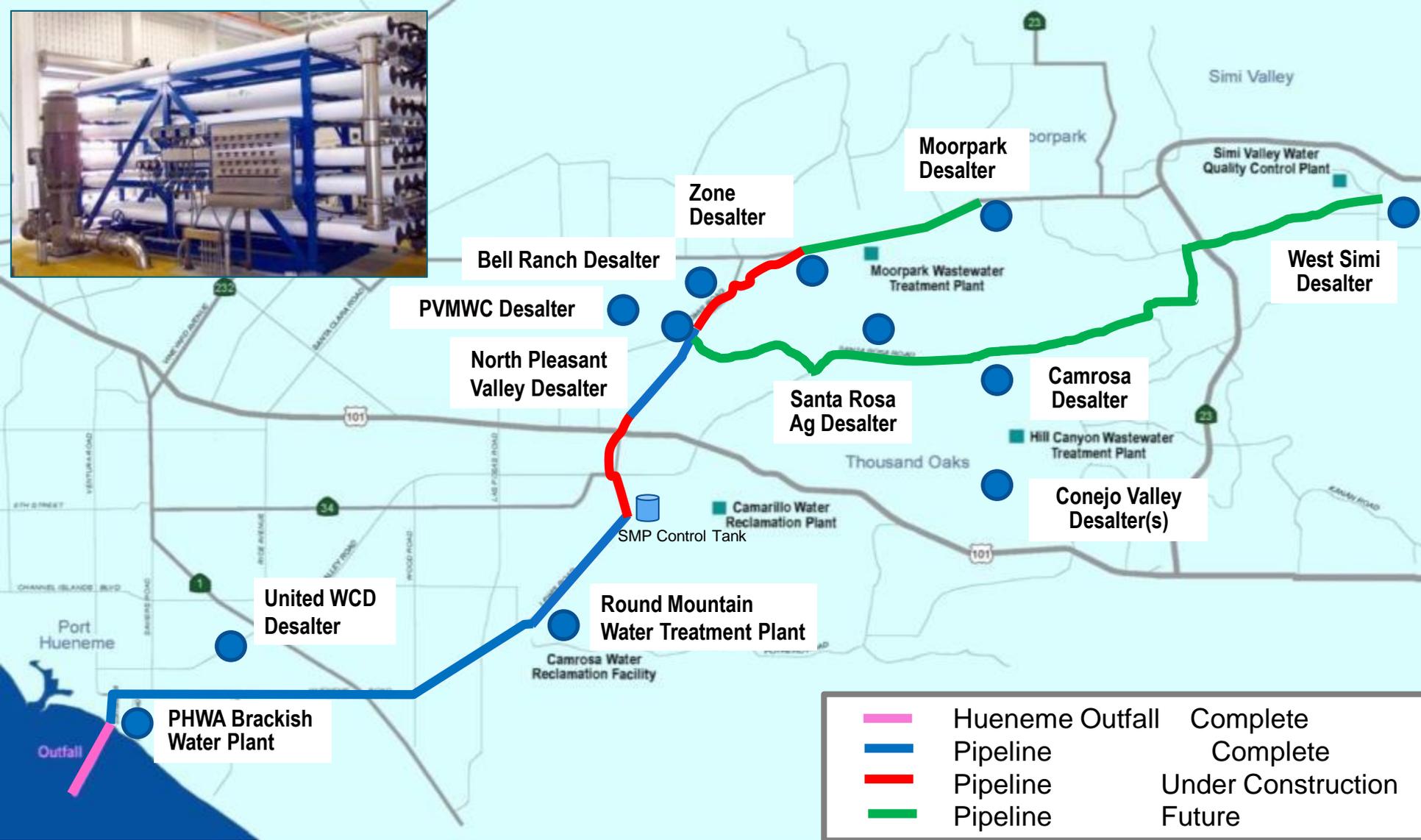


Brackish Water Plume



What is the Extent of Brackish Water in PV Basin?





Salinity Management Pipeline and Groundwater Desalters

Governor Brown's Quote:

“When God doesn't provide the water, it's not here”

